## Trig Final (Practice v48)
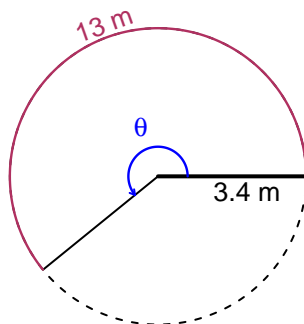
- You can use a calculator (like Desmos)
- You should have a unit-circle with special angles and coordinates marked.
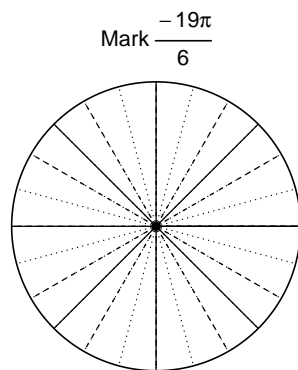
### Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The arc length is 13 meters. The radius is 3.4 meters. What is the angle measure in radians?
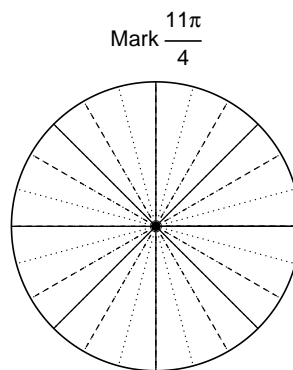


### Question 2

Consider angles $\frac{-19\pi}{6}$ and $\frac{11\pi}{4}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\cos\left(\frac{-19\pi}{6}\right)$ and $\sin\left(\frac{11\pi}{4}\right)$ by using a unit circle (provided separately).



Mark $\frac{-19\pi}{6}$

Find $\cos(-19\pi/6)$



Mark $\frac{11\pi}{4}$

Find $\sin(11\pi/4)$

**Question 3**

If $\cos(\theta) = \frac{-9}{41}$, and $\theta$ is in quadrant II, determine an exact value for $\sin(\theta)$.

**Question 4**

A mass-spring system oscillates vertically with a midline at $y = 6.2$ meters, an amplitude of 4.78 meters, and a frequency of 2.75 Hz. At $t = 0$, the mass is at the midline and moving up. Write an equation to model the height ($y$ in meters) as a function of time ($t$ in seconds).